

REMARKS

At the time the present Office Action was mailed in the above-captioned application, claims 1-12, 14-23, 25-32, 34-38, 40, 41 and 44-53 were pending. In this response, claims 1, 14, 21, 26, 44 and 48 have been amended. Claims 4, 16, 28, 34-43, 47 and 51 have been cancelled. Accordingly, claims 1-3, 5-12, 14, 15, 17-23, 25-27, 29-32, 44-46, 48-50, 52 and 53 are currently pending.

In the Final Office Action mailed February 27, 2006, all the pending claims were rejected. More specifically, the status of the application in light of the Final Office Action is as follows:

(A) Claims 1-3, 5-12, 26, 27, 29-38, 40, 41, 44-46, 48-50, 52 and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,665,922 to Schultz ("Schultz"); and

(B) Claims 4, 14-23, 25, 28, 47 and 51 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schultz in view of U.S. Patent No. 3,464,472 to Reynolds ("Reynolds").

A. Response to the Section 103 Rejections on the Basis of Schultz

Claims 34-38, 40 and 41 have been cancelled. Accordingly, the Section 103 rejections of these claims are now moot. Independent claims 1, 26, 44 and 48 have been amended to include subject matter from dependent claims that were rejected on the basis of the combination of Schultz and Reynolds. Accordingly, the Section 103 rejections of these claims, and claims depending therefrom, are addressed below under Heading B.

B. Response to the Section 103 Rejections on the Basis of Schultz and Reynolds

Claim 1, as amended, is directed to a method for fastening components, and includes inserting an elongated member through a first hole in a first component and the second hole in a second component, with a head of the elongated member positioned at least proximate to the first component. The method further includes passing a collar axially over a helical groove of the elongated member, without rotating either the collar or the elongated member prior to swaging the collar. The collar has an outwardly projecting flange and a barrel adjacent to the flange, with the barrel having a generally constant inner diameter and a generally constant outer diameter. The method still further includes applying a liquid to the elongated member before swaging the collar. The collar is then swaged to the helical groove of the elongated member by engaging the generally constant outer diameter of the barrel with an installation tool, with the first and second components positioned between the head and the collar, and with the collar positioned between the second component and a removable portion of the elongated member, without removing the liquid from the elongated member. The method then also includes removing the removable portion of the elongated member.

As discussed in the Specification at paragraphs 32, 36 and 40, the liquid applied to the elongated member can include a flowable sealant that provides a liquid-tight joint between the first and second components. The helical threads can provide an avenue by which excess sealant can move as the collar is swaged on, without requiring the operator to manually remove excess sealant from the elongated member.

Schultz is directed to a fastener that can be installed through either a swaging operation or a torquing operation (Schultz at Abstract). Schultz discloses in Figures 2 and 3 a pull stem fastener 20 having an enlarged head 22, a smooth shank portion 30, a threaded shank portion 38, a pintail portion 48, and a breakneck groove 50 between the threaded shank portion 38 and the pintail portion 48. The smooth shank portion 30 of the fastener 20 is inserted into aligned holes 32 in a series of workpieces 28, with either an

interference fit or a clearance fit. A female threaded fastener 41 is then threaded onto the threaded shank portion 38, or alternatively, a swage collar 46 is swaged onto the threaded shank portion 38.

Reynolds discloses in Figures 1 and 2 a pin 5 having a screw-threaded end portion 9 and a head 4. The pin 5 is inserted into panel members 1 and 2, and a collar or nut 6 is threaded onto the pin 5. The collar 6 is then swaged onto the pin 5, while a sealant 15 is forced out through passages or relief grooves 16 in the end of the collar 6.

In the Final Office Action, the Examiner admits that Schultz fails to teach the application of a liquid to the elongated member before swaging the collar onto the elongated member, without removing the liquid before swaging. The Examiner relies on Reynolds to fill this void in Schultz's teaching, stating that it would have been obvious to one of ordinary skill in the art to incorporate Reynolds' use of a sealant with Schultz's system. As discussed below, Reynolds and Schultz together fail to establish a *prima facie* basis for rejecting claim 1. Accordingly, the Section 103 rejection of claim 1 on the basis of Reynolds and Schultz should be withdrawn.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations (MPEP at § 2143). The MPEP provides additional guidance for establishing a *prima facie* case of obviousness. In particular, the MPEP provides that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicants' disclosure (MPEP at § 2143). The mere fact that references can be combined or modified does not render the resulting combining obvious unless the prior art also suggests the desirability of the combination (MPEP at Section § 2143.01).

In light of the foregoing guidance provided by the MPEP, the combination of Schultz and Reynolds fails to establish a *prima facie* case of obviousness with respect to claim 1 for at least the following reasons. Schultz is directed to a fastener that can be installed into a workpiece by either swaging or torquing methods so that the types of fasteners used by manufacturers can be reduced (Schultz at column 4, lines 25-29). The problem Schultz is addressing with his invention relates to the excessive number of fastener types used by manufacturers. As Schultz states, "inventorying and using multiple types of fasteners adds significant cost to the production of aircraft. Hence, those skilled in the art have recognized a need for a fastener which can be used with multiple installation means so that the quantity of fastener types used by aircraft manufacturers can be reduced" (Schultz as column 4, lines 17-23). Schultz then repeatedly cites to the advantage of his fastener as one that can be used with either a swaged or torqued collar (see Schultz at column 6 at lines 34-35, column 6 at lines 61-65).

Schultz nowhere discloses or suggests applying a liquid (e.g., a liquid sealant) to his fastener prior to a swaging operation, or completing a swaging operation without removing the liquid from the fastener. This is so for at least the reason that the problem Schultz addresses has nothing to do with the application of a liquid to the threaded fastener. Instead, as discussed above, the problem Schultz addresses is associated with reducing the number of types of fasteners a manufacturer must keep on hand to perform various fastening operations.

Even if Schultz provided some suggestion for applying a liquid to his threaded fastener, the combination of Schultz and Reynolds still fails to establish a *prima facie* case of obviousness under Section 103. For example, Schultz describes two alternative types of collars for use with his threaded fastener: a threaded collar and an unthreaded collar. However, Schultz fails to disclose or suggest which collar would be appropriate if a sealant were applied to his threaded fastener before applying the collar. Assuming for the sake of argument that one of ordinary skill in the art were motivated by Schultz's disclosure to look to Reynolds for a fastener system that can accommodate a liquid in combination with a

threaded fastener, and without the need for removing the liquid from the threaded fastener prior to a swaging operation, one would use Reynolds' disclosed collar. In particular, one would use a collar having radially extending relief grooves to provide an escape passage for a liquid sealant. Neither Reynolds nor Schultz disclose, suggest, or even hint at an understanding that passing a collar axially over the helical groove of an elongated member without rotating either the collar or the elongated member can allow the operator to apply a liquid to the elongated member before swaging the collar, and then further allow the operator to swage the collar without removing the liquid from the elongated member.

One would also not be motivated by Reynolds' disclosure to replace his threaded collar with a collar any different than the one he discloses. In particular, Reynolds' collar is deliberately threaded so that it engages the threads of his fastener. One would not be motivated by this teaching to replace his collar with one that "passes axially over a helical groove . . . without rotating either the collar or the elongated member prior to swaging the collar," as is provided for in claim 1. Accordingly, neither Reynolds nor Schultz supply the required motivation to combine their disclosed features in the manner indicated by claim 1. Therefore, the Section 103 rejection of claim 1 should be withdrawn.

Claims 2, 3 and 5-12 depend from claim 1. Accordingly, the Section 103 rejections of these claims should be withdrawn for the foregoing reasons and for the additional features of these dependent claims. Independent claims 14, 26, 44 and 48 all include features generally similar to those of claim 1, including applying a liquid to the elongated member before swaging the collar to the elongated member, and swaging the collar without removing the liquid from the elongated member. Accordingly, the Section 103 rejections of claims 14, 26, 44 and 48 should be withdrawn.

Claims 15 and 17-20 depend from claim 14, claims 27 and 29-32 depend from claim 26, claims 45 and 46 depend from claim 44, and claims 49, 50, 52 and 53 depend from claim 48. Accordingly, the Section 103 rejections of these claims should be withdrawn for the foregoing reason and for the additional features of these dependent claims.

Claim 21 includes features generally similar to those described above with reference to claim 1. In addition, claim 21 includes passing a collar over an elongated pin, with the collar including "a barrel having solid walls." The combination of Schultz and Reynolds, discussed above, specifically teaches away from at least this feature. For example, Reynolds specifically requires his collar to have "grooves 16 extending from the inside of the collar to the outside thereof" so that "the sealant 15 will be forced out through the passages 16 and relieve any hydrostatic pressure that might have been created during the final setting of the fastener." (Reynolds at col. 3, lines 11-13 and 49-52.) This is the antithesis of a collar having a barrel with "solid walls," as is included in claim 21.

Furthermore, claim 21 includes inserting an elongated pin "through a first hole in a first composite aircraft component and a second hole in a second composite aircraft component." Neither Schultz nor Reynolds disclose or suggest using their fasteners to attach composite aircraft components. Nor would it be obvious to one of ordinary skill in the art to apply either of their methods, singly or in combination, to composite components because the attachment of composite components typically differs, often in substantial ways, from the attachment of conventional metallic components. Accordingly, the Section 103 rejection of claim 21 should be withdrawn for at least the foregoing reasons and for the additional features of this claim.

Claims 22, 23 and 25 depend from claim 21. Accordingly, the Section 103 rejections of these claims should be withdrawn for the foregoing reasons and for the additional features of these dependent claims.

C. Conclusion

In light of the foregoing amendments and remarks, the claims patentably define over the applied references. Accordingly, the pending claims are now in condition for allowance. If the Examiner discovers any informalities or other matters that may be

expediently handled by telephone, he is encouraged to contact the undersigned attorney at (206) 359-3257 to handle such matters.

Dated: July 27, 2006

Respectfully submitted,

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